

LESSON OF THE MONTH

An unusual cause of shoulder pain

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A 20 year old man with no significant past medical problems presented with a six week history of gradual onset diffuse left shoulder and scapula pain. Two weeks before the onset of pain he had started work as a builder, performing heavy lifting. There was no history of injury or other precipitant. In the week before presenting, the severity of the pain prevented him from working despite regular analgesia. He did not complain of upper limb weakness. No constitutional symptoms were present. There was no preceding viral-like illness or vaccination.

On examination, there was left infraspinatus tenderness and wasting (see fig 1) with weakness of external rotation of the shoulder. Power in other muscle groups around the left shoulder was normal. All upper limb reflexes were present and sensation was normal. Examination of the left axilla revealed five small mobile lymph nodes. There was no other lymphadenopathy or splenomegaly.

Computed tomography (CT) of the left scapula and axilla was performed to determine if significant lymphadenopathy was present, for example, because of lymphomatous involvement. It showed wasting of the muscles surrounding the scapula but no mass lesions in the region of the brachial plexus. There were non-enlarged lymph nodes in the axilla.

Electromyographic (EMG) assessment revealed profuse fibrillations and positive sharp waves in the left infraspinatus muscle but no units under voluntary control, consistent with

active denervation. The left supraspinatus, biceps, triceps and deltoid were normal. Magnetic resonance imaging (MRI) of the left shoulder region confirmed a 2 cm by 1 cm multi-loculated fluid collection at the spinoglenoid notch causing compression of the inferior branch of the suprascapular nerve that supplies infraspinatus (figs 2 and 3). There was no evidence of more proximal compression of the suprascapular nerve. A small tear of the posterosuperior glenoid labrum was also identified.

A provisional diagnosis of a ganglion was made and the patient was referred to an ortho-

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Figure 2 Axial (T2 weighted) MRI showing the ganglion cyst in the spinoglenoid notch adjacent to the glenoid labrum.



Figure 1 Left infraspinatus wasting. (View from behind the patient).

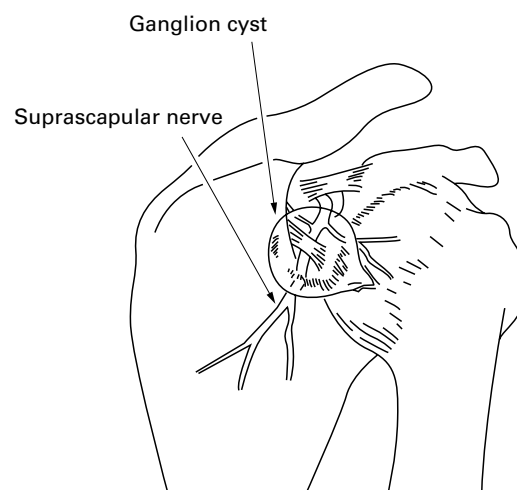


Figure 3 Diagram showing a ganglion in the spinoglenoid notch causing compression of the nerve to infraspinatus.

paediatric surgeon for an arthroscopic ganglion drainage and repair of the glenoid labrum. This was successfully performed. Ten weeks after the operation, there was significant reduction in both shoulder pain and infraspinatus wasting with only a mild reduction in global range of movement. Unfortunately, the patient failed to present for a follow up MRI three months later to assess if there had been a recurrence of the ganglion.

Discussion

With the advent of MRI, suprascapular nerve compression is becoming increasingly recognised as a cause of shoulder pain in the orthopaedic,¹⁻⁴ radiological,^{5,6} and sports medicine⁸ literature. However, we are unaware of any such reports in the rheumatological literature.

The suprascapular nerve arises from the upper trunk of the brachial plexus. It then traverses the suprascapular notch underneath the transverse scapular ligament. On entering the supraspinatus fossa, it innervates the supraspinatus muscle. It then enters the infraspinatus fossa via the spinoglenoid notch to innervate the infraspinatus muscle (fig 3).¹ In this patient, the ganglion was located at the spinoglenoid notch, causing only compression of the nerve to infraspinatus resulting in weakness of the infraspinatus muscle.

This patient is noteworthy because of his relatively acute presentation. The usual presenting symptom is that of longstanding, deep and diffuse posterolateral shoulder pain. However, this man presented with pain of only several weeks' duration that had worsened over the preceding week, raising the possibility of brachial neuritis.

This case demonstrates that EMG and nerve conduction studies are useful in localising the site of nerve compression. They distinguish nerve entrapment at the suprascapular notch, which produces denervation of both supraspinatus and infraspinatus, from that at the spinoglenoid notch, which results in infraspinatus weakness only. In addition, they exclude more widespread pathology, for example brachial neuritis.

Nevertheless, MRI is the imaging modality of choice for defining the lesion because of its excellent resolution of soft tissue. In this case, it would have been preferable to perform MRI as the initial investigation, thereby negating the need for EMG and nerve conduction studies. However, MRI is not readily available in our unit. Hence, this patient had initial EMG and nerve conduction studies to delineate the neurological abnormality.

This case also demonstrates many of the typical features of this condition. It is mostly seen in men for two reasons. Firstly, there is an association with weight lifting.^{4,7} Secondly, the spinoglenoid ligament is absent in 50% of women compared with 13% of men.⁹

The pathogenesis of this condition is uncertain. It is believed that trauma results in tearing of the posterior capsulo-labral complex. This allows synovial fluid to leak out of the joint

along the path of least resistance, thus resulting in a ganglion cyst.¹ Tirman *et al*⁶ have shown an association between ganglion cysts and glenoid labrocapsular tears on MRI—as seen in this patient. They suggest that detection of a shoulder ganglion cyst should prompt both a clinical and MRI evaluation of the glenoid labrum and joint capsule.

The treatment of this condition is dependent upon the extent of pain and the loss of function. In the absence of pain, shoulder rehabilitation to maximise function is usually the only intervention necessary, as the functional deficit is usually mild.¹ However, in the presence of persistent or severe pain, as in this case, surgery is required. Arthroscopic evaluation is often necessary with simultaneous repair of intra-articular pathology to prevent a recurrence of the ganglion. Traditionally, open ganglion excision is performed. However, Iannotti and Ramsey² report a series of three cases in which suprascapular nerve compression by a ganglion cyst was treated by arthroscopic decompression of the cyst into the shoulder joint. In each of their three cases, the patient's symptoms resolved and a postoperative MRI showed no reaccumulation of the fluid in the ganglion. The procedure was well tolerated. Successful ultrasound or CT guided aspiration of ganglia causing suprascapular nerve compression has also been reported.⁴

Overall, in patients with previously normal shoulder anatomy, a successful surgical procedure involving decompression of the ganglion with repair of any underlying labral pathology results in a good long term prognosis.

The lessons

- Suprascapular nerve entrapment must be considered in the differential diagnosis of a painful shoulder, particularly in the presence of supraspinatus or infraspinatus weakness.
- The most appropriate investigation is MRI of the shoulder girdle. However, EMG and nerve conduction studies can be useful in determining the site of nerve compression and the degree of nerve dysfunction.

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